

Application No. 10/598,663  
Amdt. Dated: August 7, 2008  
Reply to Office Action Dated: May 28, 2008

**Amendments to the Specification**

Please replace the paragraph beginning at page 1, line 29 which begins with “According to an exemplary...” with the following amended paragraph:

According to an exemplary embodiment of the present invention ~~as set forth in claim 1~~, the above object may be solved by a method of artifact correction in a data set of an object of interest, wherein an image of the object of interest is reconstructed on the basis of the data set and wherein a statistical weighing is performed during reconstruction of the image.

Please replace the paragraph beginning at page 2, line 8 which begins with “According to another exemplary...” with the following amended paragraph:

According to another exemplary embodiment of the present invention ~~as set forth in claim 2~~, the data set is a projection data set acquired by means of a source of electromagnetic radiation generating a beam and by means of a radiation detector detecting the beam.

Please replace the paragraph beginning at page 2, line 15 which begins with “Another exemplary embodiment...” with the following amended paragraph:

In another ~~Another~~ exemplary embodiment of the present invention, ~~is set forth in claim 3, wherein~~ the source of electromagnetic radiation is a polychromatic x-ray source. Furthermore, according to an aspect of this exemplary embodiment of the present invention, the source moves along a helical path around the object of interest and the beam has one of a cone beam geometry and a fan beam geometry.

Please replace the paragraph beginning at page 2, line 28 which begins with “According to another exemplary...” with the following amended paragraph:

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According to another exemplary embodiment of the present invention as set forth in ~~claim 4~~, the reconstruction of the image is performed on the basis of an iterative algorithm comprising a plurality of update steps until an end criterion has been fulfilled.

Please replace the paragraph beginning at page 3, line 6 which begins with, "According to another exemplary..." with the following amended paragraph:

According to another exemplary embodiment of the present invention as set forth in ~~claim 5~~, the iterative algorithm is a maximum-likelihood algorithm and the reconstructed image has the highest likelihood. Furthermore, the weighing is performed in each update step of the plurality of update steps.

Please replace the paragraph beginning at page 3, line 14 which begins with, "Another exemplary embodiment..." with the following amended paragraph:

In another ~~Another~~ exemplary embodiment of the present invention, is set forth in ~~claim 6~~, wherein a number of detected photons during acquisition of the data set is determined and the weighing is based on a statistical error of the number of detected photons.

Please replace the paragraph beginning at page 3, line 21 which begins with, "According to another exemplary..." with the following amended paragraph:

According to another exemplary embodiment of the present invention as set forth in ~~claim 7~~, an update of an attenuation parameter  $\mu_j^{n+1}$  is calculated from the attenuation parameter  $\mu_j^n$  by

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$$\mu_j^{n+1} = \mu_j^n + \mu_j^n \frac{\sum_i l_{ij} \left[ d_i e^{-\langle l_i, \mu^n \rangle} - Y_i \right] / \sigma_{Y_i}^2}{\sum_i l_{ij} / \sigma_{Y_i}^2}$$

wherein  $d_i$  is a number of photons emitted by the source of radiation,  $l_{ij}$  is a basis function of an  $i$ -th projection,  $l_i$  is a vector of basis functions  $l_{ij}$  of the  $i$ -th projection and  $\langle l_i, \mu \rangle$  is an inner product, defined by  $\langle l_i, \mu \rangle = \sum_j l_{ij} \mu_j$ .

Please replace the paragraph beginning at page 4, line 2 which begins with, "According to another exemplary..." with the following amended paragraph:

According to another exemplary embodiment of the present invention ~~as set forth in claim 8~~, the reconstruction of the image is based on a sub-set of at least two projections of all acquired projections of the projection data set.

Please replace the paragraph beginning at page 4, line 8 which begins with, "According to another exemplary..." with the following amended paragraph:

According to another exemplary embodiment of the present invention ~~as set forth in claim 9~~, a data processing device is provided, which comprises a memory for storing a data set and a data processor for performing artifact correction in the data set of the object of interest, wherein the data processor is adapted for performing the following operation: loading the data set and reconstructing an image of the object of interest on the basis of the data set, wherein a weighing is performed during reconstruction of the image and wherein the weighing is based on statistical considerations.

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Please replace the paragraph beginning at page 4, line 19 which begins with, "According to another exemplary..." with the following amended paragraph:

According to another exemplary embodiment of the present invention ~~as set forth in claim 10~~, the reconstruction of the image is performed on the basis of an iterative algorithm comprising a plurality of update steps until an end criterion has been fulfilled, wherein the iterative algorithm is a maximum-likelihood algorithm and the reconstructed image has the highest likelihood. Furthermore, the weighing is performed in each update step of the plurality of update steps.

Please replace the paragraph beginning at page 4, line 27 which begins with, "According to another exemplary..." with the following amended paragraph:

According to another exemplary embodiment of the present invention ~~as set forth in claim 11~~, a CT scanner system is provided, comprising a memory for storing a data set of an object of interest and a data processor for performing artifact correction in the data set of the object of interest, wherein the data processor is adapted for performing the following operation: loading the data set and reconstructing an image of the object of interest of the data set, wherein a statistical weighing is performed during reconstruction of the image.

Please replace the paragraph beginning at page 5, line 7 which begins with, "The present invention relates..." with the following amended paragraph:

The present invention relates also to a computer program which may, for example, be executed on a processor, such as an image processor. Such a computer program may be part of, for example, a CT scanner system. ~~The computer program, according to an exemplary embodiment of the present invention, is set forth in claim 12.~~ The computer program may be preferably loaded into working memories of data processors. The data processors are thus

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equipped to carry out exemplary embodiments of the methods of the present invention. The computer program may be written in any suitable programming language, for example in C++ and may be stored on a computer readable medium, such as a CD-ROM. Also, these computer programs may be available from a network, such as the WorldWideWeb, from which they may be downloaded into image processing units or processors, or any suitable computers.